

UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE  
United States Patent and Trademark Office  
Address: COMMISSIONER FOR PATENTS  
P.O. Box 1450  
Alexandria, Virginia 22313-1450  
www.uspto.gov

| APPLICATION NO. | FILING DATE | FIRST NAMED INVENTOR | ATTORNEY DOCKET NO. | CONFIRMATION NO. |
|-----------------|-------------|----------------------|---------------------|------------------|
| 10/702,235      | 11/05/2003  | Peter C. Salmon      | A-70884-1/AJT       | 7939             |

7590

12/15/2006

Aldo J. Test  
DORSEY & WHITNEY LLP  
Suite 3400  
4 Embarcadero Center  
San Francisco, CA 94111

EXAMINER

HARRISON, MONICA D

ART UNIT

PAPER NUMBER

2813

DATE MAILED: 12/15/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

|                              |                                |                                  |  |
|------------------------------|--------------------------------|----------------------------------|--|
| <b>Office Action Summary</b> | Application No.<br>10/702,235  | Applicant(s)<br>SALMON, PETER C. |  |
|                              | Examiner<br>Monica D. Harrison | Art Unit<br>2813                 |  |

**-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --**

**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

- 1) ☒ Responsive to communication(s) filed on 03 April 2006.
- 2a) ☐ This action is **FINAL**.                      2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

- 4) ☒ Claim(s) 19-29,37-41,44 and 45 is/are pending in the application.
- 4a) Of the above claim(s) 24,25,29 and 37 is/are withdrawn from consideration.
- 5) ☐ Claim(s) 44 and 45 is/are allowed.
- 6) ☐ Claim(s) 19-23,26-28 and 38-41 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

**Application Papers**

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

**Priority under 35 U.S.C. § 119**

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All    b) ☐ Some \*    c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
  2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

**Attachment(s)**

- |   |   |
|---|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892)   | 4) <input type="checkbox"/> Interview Summary (PTO-413)<br>Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948)                                  | 5) <input type="checkbox"/> Notice of Informal Patent Application                       |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08)<br>Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____  |

### DETAILED ACTION

1. Applicant's amendment filed 4/3/06 have been entered. Examiner acknowledges claims 24, 25, 29 and 37 have been cancelled.

#### *Claim Rejections - 35 USC § 102*

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

Claims 19-23, 38, 40 and 41 are rejected under 35 U.S.C. 102(b) as being anticipated by Eichelberger (5,841,193).

2. Regarding claim 19, Eichelberger discloses a method for fabricating an electronic circuit comprising the steps of: providing a rigid carrier (Figure 5a, reference 120); applying a base dielectric layer on said rigid carrier (Figure 5a, reference 122); fabricating one or more interconnection circuits having exposed input/output pads on said base layer (Figure 5d, above reference 102); fabricating wells at said input/output pads of said interconnection circuits (Figure 4, reference 108); and filling said wells with conductive bonding material (Figure 5g, reference 154).

3. Regarding claim 20, Eichelberger wherein each of said components has a conductive bump at each of its input/output pads, and each of said conductive bumps is inserted into said conductive bonding material in one of said wells (Figure 5g, reference 154).

4. Regarding claim 21, Eichelberger discloses fabricating a release layer interposed between said rigid carrier and said base dielectric layer (Figure 5a', reference 126).

Art Unit: 2813

5. Regarding claim 22, Eichelberger discloses separating said interconnection circuit or electronic assembly from said rigid carrier at said release layer, after completing said circuit or assembly (Figure 5f).

6. Regarding claim 23, Eichelberger discloses wherein said interconnection circuits comprise multiple dielectric and conducting layers (Figure 5f).

7. Regarding claim 38, Eichelberger discloses a method for forming wells filled with conductive bonding material on an interconnect circuit comprising the steps of: applying a layer of dielectric material on top of said interconnect circuit (Figure 5g, reference 106); forming openings in said dielectric layer at each input/output pad of said interconnect circuit (Figure 5g); and depositing said conductive bonding material in said openings to form wells filled with conductive material (Figure 5g, reference 152).

8. Regarding claim 40, Eichelberger discloses a method for assembling an integrated circuit chip having input/output pads on an interconnection circuit having bonding sites corresponding to said input/output pads comprising the steps of: providing a conductive bump at each of said input/output pads (Figure 5g, reference 154); fabricating wells filled with solder at each of said bonding sites (Figure 5g, reference 152); inserting said conductive bumps into said wells filled with solder (Figure 5g, reference 154); and heating and cooling said solder to make permanent connections (column 11, lines 19-47).

9. Regarding claim 41, Eichelberger discloses wherein said interconnection circuit is flexible (Figure 5f, reference 150).

***Claim Rejections - 35 USC § 103***

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Claims 26 and 27 are rejected under 35 U.S.C. 103(a) as being unpatentable over Eichelberger (5,841,193) in view of Bertin et al (6,141,245).

10. Eichelberger et al discloses all above claimed subject matter except wherein said release layer is not present near the edges of said rigid carrier, to provide an edge region of strong adhesion between said base dielectric layer and said rigid carrier (claim 26) and wherein said release layer is additionally not present in streets at the periphery of a plurality of said interconnection circuits (claim 27).

Bertin et al discloses wherein said release layer is not present near the edges of said rigid carrier, to provide an edge region of strong adhesion between said base dielectric layer and said rigid carrier (Figure 4B, reference 122) and wherein said release layer is additionally not present in streets at the periphery of a plurality of said interconnection circuits (Figure 4B, reference 122).

It is obvious, at the time the invention was made, for one having ordinary skill in the art, to modify Eichelberger with the teachings of Bertin et al, for the purpose of reducing impedance loading of semiconductor integrated circuit devices implementing protective device structures that contributes to impedance loading at an I/O pad connection.

Claims 28 and 39 are rejected under 35 U.S.C. 103(a) as being unpatentable over Eichelberger (5,841,193) in view of Hedler et al (6,664,176).

11. Eichelberger discloses all above independent claimed subject matter except a squeegee (claims 28 and 39).

Hedler et al discloses a squeegee (column 6, lines 50-54).

It is obvious, at the time the invention was made, for one having ordinary skill in the art, to modify Eichelberger with the teachings of Bertin et al, for the purpose of using the squeegee to displace conducting bonding material more effectively into openings on a substrate with minimal leakage.

#### ***Response to Arguments***

12. Applicant's arguments with respect to claims 19-23, 26-28 and 38-39 have been considered but are moot in view of the new ground(s) of rejection. Examiner also withdraws previously presented allowable subject matter for claims 40 and 41. Newly admitted prior art Eichelberger (5,841,193) reads on the subject matter.

#### ***Claim Objections***

13. Claims 21-23 are objected to under 37 CFR 1.75(c) as being in improper form because a multiple dependent claims 21-23. See MPEP § 608.01(n). Accordingly, the claim cannot depend from any other multiple dependent claims.

#### ***Conclusion***

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Monica D. Harrison whose telephone number is 571-272-1959. The examiner can normally be reached on M-F 7:00am-3:30pm.

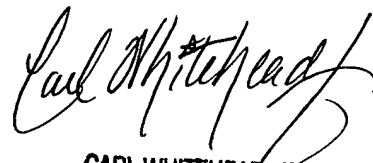
Art Unit: 2813

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Carl Whitehead Jr. can be reached on 571-272-1702. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

Monica D. Harrison  
AU 2813

mdh  
November 27, 2006

  
CARL WHITEHEAD JR.  
SUPERVISORY PATENT EXAMINER  
TECHNOLOGY CENTER 2800

**INFORMATION DISCLOSURE  
STATEMENT BY APPLICANT**

(use as many sheets as necessary)

Sheet

1

01

1

**Complete if Known**

Application Number

10/702,235

Filing Date

November 5, 2003

First Named Inventor

**Peter C. SALMON**

Group Art Unit

**Not yet assigned**

Examiner Name

**Not yet assigned**

Attorney Docket Number

**A-70884-1 (465403-41)**

## U.S. PATENT DOCUMENTS

[illegible]

**Examiner  
Signature**

Ymruw D. Williams

Date Considered

11/27/06

\*EXAMINER: Initial if reference considered, whether or not citation is in conformance with MPEP 609. Draw line through citation if not in conformance and not considered. Include copy of this form with next communication to applicant.

<sup>1</sup> Unique citation designation number. <sup>2</sup> See attached Kinds of U.S. Patent Documents at [www.uspto.gov](http://www.uspto.gov) or MPEP 901.04. <sup>3</sup> Enter Office that issued the document, by the two-letter code (WIPO Standard ST.3). <sup>4</sup> For Japanese patent documents, the indication of the year of the reign of the Emperor must precede the serial number of the patent document. <sup>5</sup> Kind of document by the appropriate symbols as indicated on the document under WIPO Standard ST. 16 if possible. <sup>6</sup> Applicant is to place a check mark here if English Language Translation is attached.

**Burden Hour Statement:** This form is estimated to take 2.0 hours to complete. Time will vary depending upon the needs of the individual case. Any comments on the amount of time you are required to complete this form should be sent to the Chief Information Officer, U.S. Patent and Trademark Office, Washington, DC 20231. **DO NOT SEND FEES OR COMPLETED FORMS TO THIS ADDRESS. SEND TO: Assistant Commissioner for Patents, Washington, DC 20231. 1129983\_1**



|                                   |                                       |  |  |             |
|-----------------------------------|---------------------------------------|--|--|-------------|
| <b>Notice of References Cited</b> | Application/Control No.<br>10/702,235 |  | Applicant(s)/Patent Under<br>Reexamination<br>SALMON, PETER C. |             |
|                                   | Examiner<br>Monica D. Harrison        |  | Art Unit<br>2813   | Page 1 of 1 |

**U.S. PATENT DOCUMENTS**

| * |   | Document Number<br>Country Code-Number-Kind Code | Date<br>MM-YYYY | Name                          | Classification |
|---|---|--|-----------------|-------------------------------|----------------|
| * | A | US-5,841,193                                     | 11-1998         | Eichelberger, Charles William | 257/723        |
| * | B | US-6,141,245                                     | 10-2000         | Bertin et al.                 | 365/185.05     |
| * | C | US-6,664,176                                     | 12-2003         | Hedler et al.                 | 438/614        |
|   | D | US-  |                 |                               |                |
|   | E | US-  |                 |                               |                |
|   | F | US-  |                 |                               |                |
|   | G | US-  |                 |                               |                |
|   | H | US-  |                 |                               |                |
|   | I | US-  |                 |                               |                |
|   | J | US-  |                 |                               |                |
|   | K | US-  |                 |                               |                |
|   | L | US-  |                 |                               |                |
|   | M | US-  |                 |                               |                |

**FOREIGN PATENT DOCUMENTS**

| * |   | Document Number<br>Country Code-Number-Kind Code | Date<br>MM-YYYY | Country | Name | Classification |
|---|---|--|-----------------|---------|------|----------------|
|   | N |  |                 |         |      |                |
|   | O |  |                 |         |      |                |
|   | P |  |                 |         |      |                |
|   | Q |  |                 |         |      |                |
|   | R |  |                 |         |      |                |
|   | S |  |                 |         |      |                |
|   | T |  |                 |         |      |                |

**NON-PATENT DOCUMENTS**

| * |   | Include as applicable: Author, Title Date, Publisher, Edition or Volume, Pertinent Pages) |
|---|---|---|
|   | U |   |
|   | V |   |
|   | W |   |
|   | X |   |

\*A copy of this reference is not being furnished with this Office action. (See MPEP § 707.05(a).)  
Dates in MM-YYYY format are publication dates. Classifications may be US or foreign.

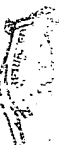
Organization **TC2800** Bldg/Room **Jeff**

United States Patent and Trademark Office

P.O. Box 1450

Alexandria, VA 22313-1450

If Undeliverable Return in Ten Days



**UNDELIVERABLE AS  
ADDRESSED**

**AN EQUAL OPPORTUNITY EMPLOYER**

OFFICIAL BUSINESS  
PENALTY FOR PRIVATE USE, \$300



02 1A  
0004205065  
MAILED FROM



**UNDELIVERABLE AS  
ADDRESSED**

